

AMENDMENTS TO THE SPECIFICATION

Please AMEND the specification according to the following modifications. Paragraph numbers correspond with the numbers inserted into the published application.

Please replace paragraph [0003] with the following amended paragraph:

[0003] The internet, and more specifically, the World Wide Web, has hundreds of millions of pages available, waiting to present information on a variety of topics to an individual. In addition, many companies, organizations, and individuals have constructed true applications using the World Wide Web as the delivery medium. Consumers can now conduct on-line banking, shop for automobiles, participate in on-line auctions, and many other activities of a transactional nature. World Wide Web based applications such as those mentioned above all present the user with the various screens and data that make up the application through a web browser such as ~~Netscape Navigator~~NETSCAPE NAVIGATOR, or ~~Microsoft Internet Explorer~~MICROSOFT INTERNET EXPLORER. Software engineers term these types of World Wide Web transactional programs 'Web Applications' in contrast to software applications that run on older text based terminals, or in contrast to older client server technologies. Broadly then, World Wide Web has produced 2 classes of content. The first class of content may be read-only content, in which the user is directed to a specific web page and can then read the content of that page. The second class of content are Web applications, wherein the user actually enters data in an interactive manner to perform some tasks, like shopping for a product, performing a banking transaction, etc.

Please replace paragraph [0016] with the following amended paragraph:

[0016] In an embodiment, the system for manipulating existing websites has a tracing means wherein the tracing means collects ~~data from internet~~Internet protocol (IP) network events, event data obtainable from application programming interfaces (APIs) including ~~winsock~~WINDOWS SOCKET (WINSOCK) API, MICROSOFT WinInet API, MICROSOFT shell API, MICROSOFT security API, MICROSOFT User API, MICROSOFT Active Directory API, MICROSOFT HTML API and MICROSOFT DOM application programming interfaces.

Please replace paragraph [0017] with the following amended paragraph:

[0017] In an embodiment, the system for manipulating existing websites has a computer program wherein the computer program monitors data and events running on ~~Microsoft Windows~~MICROSOFT WINDOWS operating systems.

Please replace paragraph [0023] with the following amended paragraph:

[0023] In an embodiment, the system for manipulating existing websites has the source code wherein the source code is transformed to XSL wherein a XSL code exists for popular languages including ~~Java, JavaScript, Visual Basic, Cold Fusion, C/C++, Pascal~~JAVA, JAVASCRIPT, VISUAL BASIC, COLD FUSION, C/C++, PASCAL and a plurality of other computer languages.

Please replace paragraph [0027] with the following amended paragraph:

[0027] In an embodiment, the method further comprises the step of tracing an existing website to collect data from ~~internet~~Internet protocol (IP) events and a plurality of application programming interfaces.

Please replace paragraph [0044] with the following amended paragraph:

[0044] Another advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may trace, monitor, filter and/or analyze ~~Microsoft Windows~~MICROSOFT WINDOWS based applications and being capable of attaching into the network event layer of the application and tracing it.

Please replace paragraph [0045] with the following amended paragraph:

[0045] Yet another advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may trace, monitor, filter and/or analyze a ~~Unix~~UNIX or ~~Unix~~UNIX variant shared library and be capable of attaching into the network event layer of the ~~Unix~~UNIX application and tracing it.

Please replace paragraph [0068] with the following amended paragraph:

[0068] Yet another advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may convert and/or modify the XML code into ~~Microsoft Office~~MICROSOFT OFFICE documents.

Please replace paragraph [0069] with the following amended paragraph:

[0069] An advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may convert and/or modify the XML code into HTML or other ~~internet~~Internet formats.

Please replace paragraph [0070] with the following amended paragraph:

[0070] Yet another advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may convert and/or modify the XML code into ~~Java and/or JavaScript~~JAVA and/or JAVASCRIPT.

Please replace paragraph [0071] with the following amended paragraph:

[0071] Still another advantage of the present invention is to provide an automated software robot generator and a method for using the same wherein the software may convert and/or modify the XML code into ~~Cold Fusion~~COLD FUSION.

Please replace paragraph [0084] with the following amended paragraph:

[0084] Turning now to the drawings wherein elements are identified with numbers and like elements are identified with like numbers throughout the schematics, in an embodiment of the present invention, ~~the~~ a computer software program 1 (also referred to interchangeably as "the program" and "the software") may perform a plurality of functions with respect to ~~the~~ tracing and monitoring, filtering and analyzing ~~of the~~ network data. For example, the computer software program 1 may intercept network calls from a ~~MS Windows~~MICROSOFT WINDOWS application. The computer software program 1 may trace the network activity for the application as it observes the application in process. Typically, the network activity involves the HTTP protocol, but in other embodiments may involve other ~~IP~~Internet protocol (IP) and non-IP based protocols.

Please replace paragraph [0085] with the following amended paragraph:

[0085] ~~Figure~~FIG. 1 illustrates ~~a screen capture of one embodiment of the computer software program 1 of the present invention. In Figure 1, the~~The computer software program 1 may capture Internet protocol (IP) and application data flowing over the network between the application being traced and one or more computers on a network attached directly or indirectly to the computer running the ~~AFT~~computer software program 1. The executable steps of the computer software program 1 ~~may use~~comprise at least a tracing step 3, a filtering step 4 and an analyzing step 5. ~~a~~The tracing means~~step 3 to monitor~~monitors the flow of web traffic on the ~~internet~~Internet (not shown). The data from the network tracing ~~means~~ step 3 may be visible to the operator, however, the traced data may also be completely hidden from view of the end user (not shown). The tracing ~~means~~step 3 may produce data that may be analyzed by ~~a~~the analyzing ~~means~~step 5 and processed into an XML based format extract data 9. The XML extract data~~Data 9~~ obtained after processing by the analyzing ~~means~~step 5 may be converted, or transformed, at a transformation step 11 into XSL based format data 13. Alternatively, the XML extract data 9 may be ~~converted~~transformed into XSLT format based data 15. In an embodiment of the present invention, during the analysis phase analyzing step 5 ~~[,]~~ groups data packets that were in temporal order ~~are grouped~~ into integrated blocks of data for send/receive transactions.

Please replace paragraph [0086] with the following amended paragraph:

[0086] In another embodiment of the present invention, the program may allow for drag and drop or other manipulation of the XML extract data 9 in preparation for code generation. Operations on the XML extract data 9 include, but are not limited to: adding XML nodes (not shown), deleting XML nodes (not shown), search and replace operations on nodes and data in the XML nodes (not shown).

Please replace paragraph [0087] with the following amended paragraph:

[0087] The core data from which an embodiment of the present invention functions may ~~includes~~ include data and events obtainable on a computer running the ~~MS Windows~~MICROSOFT WINDOWS operating system in any of its incarnations including but not

limited to WindowsWINDOWS, WindowsWINDOWS 95, WindowsWINDOWS NT, WindowsWINDOWS XP, hereinafter referred to as WindowsWINDOWS.

Please replace paragraph [0088] with the following amended paragraph:

[0088] Turning now to FIG. 2, the present invention also includes a method 2 of using the computer software program 1. The computer software program 1 may obtain data from a MicrosoftMICROSOFT or any third party supplied software by using an Application Programming interface (API) or software 'hook'. A software hook may work by intercepting Application Programming interface calls at a first step S55[.]. A second step S57 comprises analyzing the parameters and data passed to the API call. In an embodiment of the present invention, the computer software program 1 obtains a detailed trace of various API calls and the parameters and data sent to and from those API's. At a third step S59, the method 2 comprises recording, or saving, the traced data (the parameters and data passed to and from the API call) in memory (RAM) or on a disk (see Figure 2). and possibly recording the parameters and data passed to the API call as shown in Figure 2. At a fifth step S63, Thecomputer software program 1 may then pass the parameters and data onto the original target of the API call, namely the MicrosoftMICROSOFT or third party library. At a final step S65, the computer software program 1 produces an extract file containing records of parameters and Internet Protocol (IP) network event data associated with API calls and adapted for transformation to source code. In an embodiment of the present invention, the software may work by obtaining a detailed trace of various API calls and the parameters and data sent to and from those API's. The trace data may be saved in memory (RAM) or on a disk (see Figure 2).

Please replace paragraph [0089] with the following amended paragraph:

[0089] In addition to tracing the original raw trace data, an embodiment of the present invention may include an optional fourth step S61 between the third step S59 and the fifth step S63. The optional fourth step 61 comprises insertinserting markers or tags in the saved trace data that provide added information about IP network events and data. The markers or tags may include timing, and other information used by an embodiment in the analysis and other phases.

Please replace paragraph [0090] with the following amended paragraph:

[0090] As further illustrated in FIG. 1, the computer software program 1 comprises a hardware or software based network analyzer and/or analyzing means~~step 5 may be used to that facilitate~~facilitates and aids~~the tracing means~~step 3 in tracing the network at first step 55 and provide~~thereby providing~~ a suitable network trace.

Please replace paragraph [0091] with the following amended paragraph:

[0091] ~~The software hook in~~In an embodiment of the present invention, the software hook of the computer software program 1 hooks into API calls and traces Internet Protocol network data and parameters passed to and from a website ("web") browser such as Internet Explorer~~INTERNET EXPLORER~~ [[55]], or Netscape Navigator~~NETSCAPE NAVIGATOR~~ [[57]]. However, the computer software program 1 also ~~may be used to~~ trace non-browser applications such as e-mail clients [[59]], IP based file servers and many other types of non-browser applications. The types of data obtained from a browser and third party supplied products may include, but ~~is~~are not limited to[[]]: Internet Protocol network event data [[61]] including data obtainable from the ~~Windows~~WINDOWS socket or Winsock API; Data and events obtainable from the ~~MS~~MICROSOFT WinInet API; data and events obtainable from the ~~MS~~MICROSOFT shell API; data and events obtainable from the ~~MS~~MICROSOFT security API; data and events obtainable from the ~~MS~~MICROSOFT User API; data and events obtainable from the ~~MS~~MICROSOFT Active Directory API; data and events obtainable from ~~MS~~MICROSOFT HTML API; and data and events obtainable from ~~MS~~MICROSOFT DOM API.

Please replace paragraph [0092] with the following amended paragraph:

[0092] ~~Figure~~FIG. 1 also illustrates the tracing portion of the design of the computer software program 1 in an embodiment of the present invention. The tracing ~~phase~~step 5 may ~~obtain a result in the acquisition of a large amount of data during operation~~execution of the computer software program 1. A lot of the data obtained may be redundant in nature and not particularly useful in further processing, and further may be of little interest to the end user. The filtering step 4 removes the useless data. To eliminate the redundancy of the filtered data, the computer software program 1 removes ~~may analyze and/or remove~~ [[25]] network management packets that are acknowledgements, retries, etc. Moreover, the analyzing step 5 of the computer software program 1 may collate the IP data packets into a single HTTP based

message and/or the computer software program 1 may further ~~collage~~collate the HTTP messages into single records of content objects (not shown). The objects may be HTML, images, audio, or other HTTP content. The HTTP may also include web pages, audio, video ~~and or~~and/or multiple other records. Additionally, HTTP interleaves content from multiple requests. In ~~the initial analysis phase~~, an embodiment, the filtering step 4 re-collates the individual sent/received packets of a content object into a single content record.

Please replace paragraph [0093] with the following amended paragraph:

[0093] Again referring to FIG. 1, once the ~~trace~~ tracing step 3 is ~~and filtered~~filtered filtering step 4 ~~process the data, an analysis~~ the analyzing step 5 ~~of the further processes the filtered trace data may be performed~~. The output of the ~~initial analysis~~ analyzing step 5 is the XML extract data 9. The XML extract data 9 is referred to as the "Extract", since it may contain a condensed version of the relevant ~~trace~~ traced IP network events and associated parameters and event data. In an embodiment of the present invention, the analysis ~~phase~~ step 5 may emit an XML record for each content object in the order that it was received. Moreover, the analysis phase may emit an XML record redirect and added redirect information; emit an XML record for cookie reads/writes; emit an XML record for user navigate events which may allow a user to ~~click~~ click on a link on a browser; emit HTTP header information as XML; and may emit various other management information relating to the network and user event trace as needed.

Please replace paragraph [0094] with the following amended paragraph:

[0094] ~~One embodiment of~~ As shown in FIG. 1, the computer software program 1 of the present invention may produce produces source code 31 that may mimic what the user did during the ~~recording and tracing phase~~ step 3. The source code 31 may be used on a client machine or on a server machine. Generations of source code 31 may be via an XSL transform of the ~~Extract XML~~ XML extract data 9. Another embodiment for generating source code 31 or other useful expressions of the XML extract data 9 may be by modification of the source code ~~[[33]]31 to produce modified source code 33~~. Modification ~~that may be performed in other ways including hard coding or using a computer language to parse the extract and generate some other useful product from the XML extract data 9~~. This optional embodiment is shown by way of a broken line in FIG. 1 between the souce code 31 and the modified source code 33.

Please replace paragraph [0095] with the following amended paragraph:

[0095] In an embodiment of the present invention, ~~the XSL exists for transforming the XML extract data 9 into various popular languages including Java, JavaScript, Visual Basic, Cold Fusion, C/C++, Pascal~~ JAVA, JAVASCRIPT, VISUAL BASIC, COLD FUSION, C/C++, PASCAL and many others.

Please replace paragraph [0096] with the following amended paragraph:

[0096] In an embodiment, parts of the ~~AFT application~~ automatically generated source code 31 embodying a software robot (hereafter referred to interchangeably as "source code" and "generated source code") may be integrated ~~[[35]]~~ into a web browser as a browser plug-in 35 or extension. In an embodiment, this web-browser mode may allow interactive stepping through the generated source code 31 generated on a page by page basis. In the alternative, the browser mode may allow interactive stepping through the generated source code 31 generated on a event by event basis. In Browser mode, embodiments may allow the computer software program 1 to debug 37 the browser automatically generated source code 31 by displaying debug messages, HTTP header parameters, or other data in the browser plug-in 35.

Please replace paragraph [0097] with the following amended paragraph:

[0097] Additionally, the ~~technology~~ software robot comprising the automatically generated source code 31 may be used to perform automated page completion. In the preferred embodiment of the present invention, end-users tend to be concerned with filling in form information on multiple pages on a web site. An embodiment of the invention ~~may allow~~ allows the end user to simply ~~click~~ click on the next or similar button in the browser plug in 35 or on the actual web page, and the ~~software~~ source code 31 sends the appropriate data over the network as if the user had actually typed in the values on the form.

Please replace paragraph [0098] with the following amended paragraph:

[0098] In another embodiment of the present invention, a user may ~~click~~ click on a "run" button in the browser plug-in 35 that completes multiple forms without further user intervention.

Please replace paragraph [0099] with the following amended paragraph:

[0099] ~~Figure~~FIG. 3 illustrates the relationship of various software modules of the computer software program 1 in an embodiment. The software modules may be divided into those that run during the analysis data capture phase, and software that may run either on a client and/or on a server machine during playback of generated source code 31. Client playback may be either via a dedicated win32 application 34, or a web browser plug-in 35 and/or browser helper object. As ~~Figure~~FIG. 3 illustrates, the Graphic user interface (GUI) 39 manages the main application, windows, and controls necessary to trace, analyze, generate source code 31 and test. The GUI support 41 provides high level support routines for manipulating the extract, trace and other high level objects. The ~~Internet Explorer~~INTERNET EXPLORER (or any other browser application) DOM Hook 43, hooks the document model, manipulates and controls the record/playback, browser windows, winsock.dll, wininet.dll, user32.dll and others. The Hooking DLL 45 hooks winsock.dll, wininet.dll, user32.dll and others.

Please replace paragraph [00100] with the following amended paragraph:

[00100] The computer software program 1 also includes base utilities 47 and server playback modules that may have code for thread, lock, process, and other core operating system and software functions. The computer software program 1 may also have a single, fully single threaded version of the server software.